Experimental investigation of tribological properties of laser textured tungsten doped diamond like carbon coating under dry sliding conditions at various loads

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ABSTRACT

Laser micro texturing technique has shown its potential in reducing friction and wear at various mechanical interfaces such as automotive and cutting tools etc. Automotive parts are coated with Diamond-like Carbon (DLC) coatings to enhance their performance. Due to stringent condition at the automotive contacts and demand for performance enhancement, increase in performance of DLC coatings is required. In this study laser micro texturing is being combined with tungsten doped DLC coating. In order to analyze the benefits of laser micro texturing on tungsten doped DLC coating. Tribological testing was conducted on a reciprocating test rig at various loading conditions. The results indicated that laser textured tungsten doped DLC coating showed the lower coefficient of friction compared to un-textured tungsten doped DLC coating at a load of 15 N, 25 N and 35 N. Higher graphitization was observed in the case of un-textured coating at 35 N load.

KEYWORDS

Coefficient of frictions; Diamond-like carbon coatings; Doped diamond-like carbon; Doped DLC; Experimental investigations; Laser surface texturing; Performance enhancements; Tribological properties

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